BIO 9 - REVIEW FOR EXAM 4

Sp98

CHROMOSOMES & CELL DIVISION (Ch. 18)

1. Identify the number of chromosomes in human cells after meiosis, and after fertilization.
2. Distinguish chromosome, homologous chromosomes, chromatid, gene, autosome, & sex chromosome.
3. Name and describe the major events in mitosis (especially the activity of the chromosomes).
4. Identify the key differences between mitosis & meiosis, including their functions and end-products.
5. Discuss the role of the X chromosome, y chromosome, and Barr body in the determination of sex.
6. Describe the different types of chromosomal abnormalities, and how they developed.

GENETICS (Ch. 19)

1. Define genetics, and identify practical applications and problems when studying human genetics.
2. Compare gene, allele, dominant & recessive, homozygous, heterozygous, genotype, & phenotype.
3. Solve monohybrid problems by setting up the Punnett square and calculating the offsprings.
4. Interpret pedigree charts (family trees), including the interpretation of phenotypes and genotypes.
5. Discuss the genetic role of codominance, multiple alleles, polygenic trait, & environment influence.
6. Identify the various sources of genetic variation (independent assortment, crossing over, sexual reproduction, and random mutation).

GENES & DNA (Ch. 20)

1. Identify the number, locus (location), and function of genes within the chromosome.
2. Describe the structure of nucleotides, and their arrangement within the DNA & RNA molecule.
3. Discuss the function, location, product, & relationship of replication, transcription, & translation.
4. Describe the steps in the process of protein synthesis, including the role of DNA, mRNA, rRNA, tRNA, ribosome, and amino acid.
5. Describe the role of the genetic code, gene mutations, and genetic engineering in human genetics.

EVOLUTION (Ch. 22)

1. Identify the process where small changes over generations lead to the development of new species.
2. Identify Darwin's explanation for evolution, and outline the 4 main arguments in his explanation.
3. Identify the 2 most important criteria for fitness in the evolution of plants and animals.
4. Identify the various sources of evidence for evolution (including plate tectonics and biogeography).
5. Describe the current theory for the origin of life based on chemical evolution.
6. Define species, and discuss how they are promoted, maintained, and adapted to the environment.
7. Discuss the primate adaptations of humans, and their evolution from primate ancestors.
8. Describe the physical & behavioral differences of Australopithecus, Homo erectus, & Homo sapiens.

ECOLOGY (Ch. 23-24)

1. Distinguish ecology, biosphere, biome, and ecosystem; and describe several different biomes.
2. Distinguish biogeochemical cycle, energy flow, food chain, food web, and food pyramid.
3. Compare symbiosis, neutralism, competition, predation, parasitism, mutualism, & commensalism.
4. Compare the different population growth in J and S-curves, and the role of the carrying capacity.
5. Describe the major differences between industrial high-energy & traditional low-energy cultures.
6. Describe the ecological adaptations and fertility control practiced by early hunters & gatherers.
7. Discuss the ecological problems facing industrial society (population, food, resources, & pollution).
8. Discuss the stages in demographic transition theory, and how it impacts the current population.

EXAM DATE _____ TIME _____